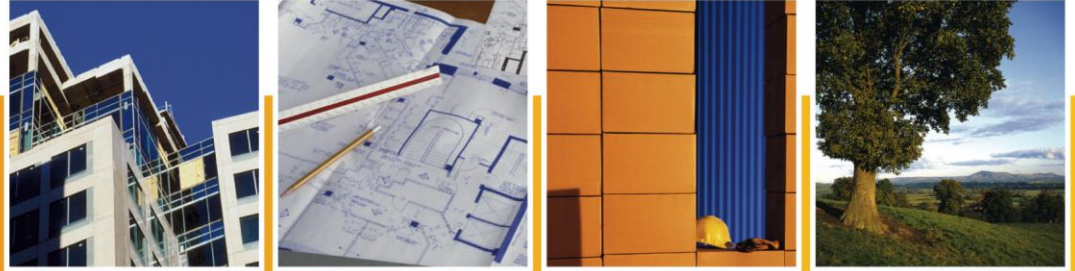


# STATEMENT OF ENVIRONMENTAL EFFECTS



For  
**Battery Energy Storage System (Cingu)**

At  
**981 New England Highway, Aberdeen 2336**

Prepared for  
**Hive Battery Developments Pty Ltd**

**December 2023**  
Report 23/086 Rev A

Prepared by



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**Project Manager:**
**Date: 21.12.2023***This document is for discussion purposes only, unless signed and dated by the person identified.***DISCLAIMER:**

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## CONTENTS

<b>1.0</b>	<b>Executive summary .....</b>	<b>6</b>
<b>2.0</b>	<b>Introduction.....</b>	<b>8</b>
2.1	Purpose.....	8
2.2	Site Description .....	8
2.3	Application details .....	8
2.3.1	Applicant details .....	8
2.3.2	Contact details .....	8
2.3.3	Ownership details.....	8
2.4	Document Structure .....	9
<b>3.0</b>	<b>Site analysis.....</b>	<b>10</b>
3.1	Location .....	10
3.2	Existing site .....	11
3.3	Archaeology and Heritage .....	11
3.4	Access/ Transport .....	11
3.5	Topography, Hydrology & Vegetation .....	12
3.6	Surrounding land use .....	12
3.7	Services to site .....	12
3.8	Flooding .....	12
3.9	Bushfire.....	13
<b>4.0</b>	<b>Proposed development .....</b>	<b>14</b>
4.1	Summary.....	14
4.2	Details .....	15
4.2.1	Design.....	15
4.2.2	Access .....	16
4.2.3	Parking.....	17
4.2.4	Hours of Operation.....	17
4.2.5	Staffing.....	17
4.2.6	Lighting .....	17
4.2.7	Fencing .....	17
4.2.8	Landscaping.....	17
4.2.9	Earthworks .....	18
4.2.10	Stormwater Management .....	19

<b>5.0</b>	<b>Legislative Consideration .....</b>	<b>20</b>
5.1	Relevant Legislation .....	20
5.1.1	Environmental Planning and Assessment Act 1979 .....	20
5.1.2	Environmental Planning and Assessment Regulation 2021 .....	20
5.1.3	Protection of the Environment Operations Act 1997 .....	20
5.2	State Environment Planning Policy (SEPP) .....	20
5.2.1	SEPP (Transport and Infrastructure) 2021 .....	20
5.2.2	SEPP (Planning Systems) 2021 .....	21
5.2.3	SEPP (Resilience and Hazards) 2021 .....	22
5.3	Muswellbrook Council Local Environmental Plan 2009.....	24
5.4	Development Control Plan.....	26
<b>6.0</b>	<b>Key planning/environmental issues .....</b>	<b>33</b>
6.1	Context and Setting.....	33
6.2	Access, transport, and Traffic.....	33
6.3	Visual Impact.....	33
6.4	Services .....	34
6.5	Stormwater.....	34
6.6	Earthworks .....	34
6.7	Flora and Fauna.....	34
6.8	Heritage .....	35
6.9	Bushfire.....	35
6.10	Flooding .....	35
6.11	Noise.....	35
6.12	Preliminary Hazard Analysis.....	36
6.13	Waste.....	36
6.14	Decommissioning.....	37
6.15	Safety and security.....	37
<b>7.0</b>	<b>Project justification and need .....</b>	<b>38</b>
<b>8.0</b>	<b>Conclusion .....</b>	<b>39</b>

## APPENDICES

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Appendix A: Title Search
Appendix B: AHIMS Report
Appendix C: Site Layout
Appendix D: Compound Layout
Appendix E: Compound Details
Appendix F: Operational Information
Appendix G: Traffic Impact Assessment
Appendix H: Hush Panel Specifications
Appendix I: Landscape Plan
Appendix J: Ausgrid Certified Plans
Appendix K: SEPP-RH Report
Appendix L: Fire Incident Management Plan
Appendix M: Ecological Assessment Report
Appendix N: Bushfire Report
Appendix O: Noise Impact Assessment
Appendix P: Waste Management and Minimisation Plan
Appendix Q: Decommissioning Report

## FIGURES

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Figure 1: Location Plan .....	10
Figure 2: Site Plan .....	11
Figure 3: Biodiversity and Hydrolines .....	12
Figure 4: Flood Mapping.....	13
Figure 5: Bushfire Mapping .....	13
Figure 6: Overall Site Layout.....	14
Figure 7: Compound Layout .....	15
Figure 8: Battery Cabinet .....	16
Figure 9: Land Use Zone.....	24

## TABLES

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Table 1: Battery Cabinet Specification.....	16
Table 2: DCP Compliance Table.....	32

## 1.0 EXECUTIVE SUMMARY

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This Statement of Environmental Effects (SEE) has been prepared by HDB Town Planning and Design on behalf of Hive Battery Developments Pty Ltd. This SEE supports the lodgement of a development application seeking consent for a Battery Energy Storage System (BESS) on RU1 zoned Lot 51 DP 776564, 981 New England Highway, Aberdeen 2336. The project is a part of Hive consisting of the installation of ten (10) BESS in total. Three (3) of which are proposed on the subject lot and are subject to three (3) separate Development Applications.

The SEE provides the following:

- Details of the Application (Section 2)
- An extensive assessment/analysis of the existing Site (Section 3)
- A detailed description of the proposed development (Section 4)
- An assessment of the proposed development against all the relevant planning controls and matters as outlined under Section 4.15 (Section 5)
- An assessment of the proposal with regard to the key planning and environmental issues identified (Section 6)
- Justification and Need for the Project (Section 7)

The subject site sits amidst the rural area of Aberdeen and is zoned RU1 – Primary Production under the council’s mapping. Primary access to the lot is from the New England Highway. The property has an 11kv transmission line in the vicinity which will allow a relatively easy connection to the proposed battery grids.

This application seeks to install a BESS on the site. The proposed BESS measures 32.5m X 44.2m. The site works including construction of the pad, access and stormwater management are part of the development application for the adjoining BESS (Tetra). The only works, external to the facility for the Cingu site are the trenching for the connection point and installation of the BESS batteries/equipments.

The project is part of a Hive consisting of 10 BESS in total. Ausgrid has permitted the client to have three (3) BESS connections on the subject site relying on three (3) separate 11kv “feeders” into the substation. This application is only for installing one (1) BESS named “Cingu” and the site works for Tetra and Cingu. The remaining two (2) BESSs (Tetra and Magna) are subject to separate similar Development Applications.

Development Application for Magna is currently under assessment with the council ref DA 2023/57.

The proposed development is permissible on the subject land under *section 2.36 – SEPP (Infrastructure and Transport) 2021* and is consistent with the objectives of the RU1 zone under Muswellbrook Shire Council’s Local Environment Plan (LEP) 2009.

This report concludes that the proposal can be achieved with minimal environmental impacts.

Having reviewed and assessed the proposal, the application is submitted for the consideration of Muswellbrook Shire Council on behalf of our Client. Based on the assessment undertaken we recommend approval of the application, subject to the recommendations of this and the other supporting reports.

## 2.0 INTRODUCTION

---

### 2.1 PURPOSE

The SEE addresses the planning requirements pertaining to the proposed development of a Battery Storage Facility. It provides an assessment of the potential environmental impacts pursuant to the requirements of Section 4.15 of the *Environmental Planning and Assessment Act 1979* (the EP&A Act).

The SEE has been prepared by HDB Town Planning and Design (HDB) on behalf of Hive Battery Developments Pty Ltd. The application is lodged with Muswellbrook Shire Council pursuant to Section 4.12 of the EP&A Act.

### 2.2 SITE DESCRIPTION

Lot 51 DP 776564

981 New England Highway, Aberdeen 2336

### 2.3 APPLICATION DETAILS

#### 2.3.1 APPLICANT DETAILS

Hive Battery Developments Pty Ltd  
C/- HDB Town Planning & Design  
PO Box 40  
MAITLAND NSW 2320

#### 2.3.2 CONTACT DETAILS

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HDB Town Planning & Design  
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FX: 02 4933 6683

E: Aprajita@hdb.com.au

#### 2.3.3 OWNERSHIP DETAILS

K.L. & H.R. Day Pty Ltd

See Title Search as *Appendix A*



## 2.4 DOCUMENT STRUCTURE

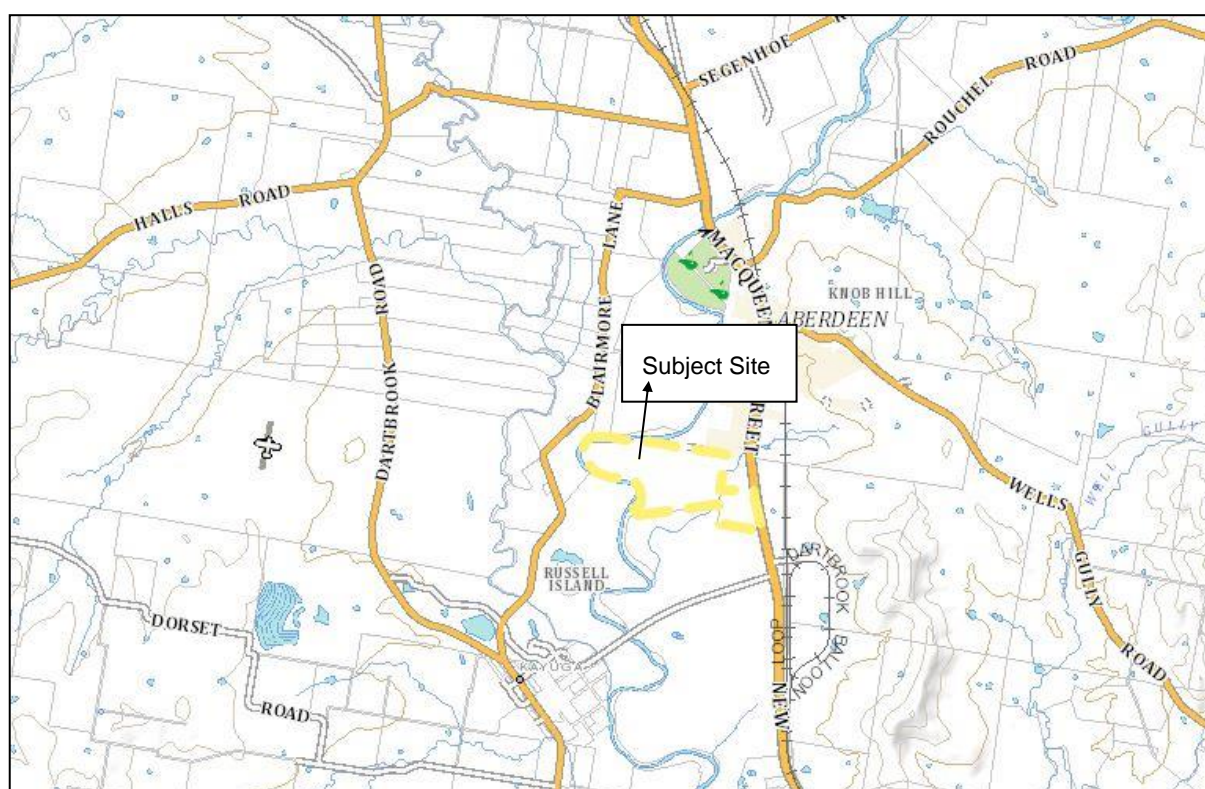
The SEE has been structured as follows:

- Section 1 - Executive summary - provides a general overview of the projects its findings and conclusions
- Section 2 – Introduction - provides a general background of the project and defines the site, the current owner and contact details
- Section 3 – Site Analysis – provides a detailed analysis of the site proposed for the development.
- Section 4 – Proposed Development – provides a detailed description of the proposal including its suitability to the site.
- Section 5 - Legislative Context – provides the legislative context of the development.
- Section 6 – Key Planning and Environmental Issues – provides details of any potential impacts of the project on the subject site and includes mitigation measures that are proposed to reduce and / or remove the potential impacts.
- Section 7 – Project Justification and Need – provides a summary of the project and a justification of the proposal with reference to the principles of ecologically sustainable development and objectives of the Environmental Planning and Assessment Act, 1979.
- Section 8 – Conclusion – provides a conclusion and requests that Muswellbrook Shire Council grant conditional consent to the proposed development.

## 3.0 SITE ANALYSIS

### 3.1 LOCATION

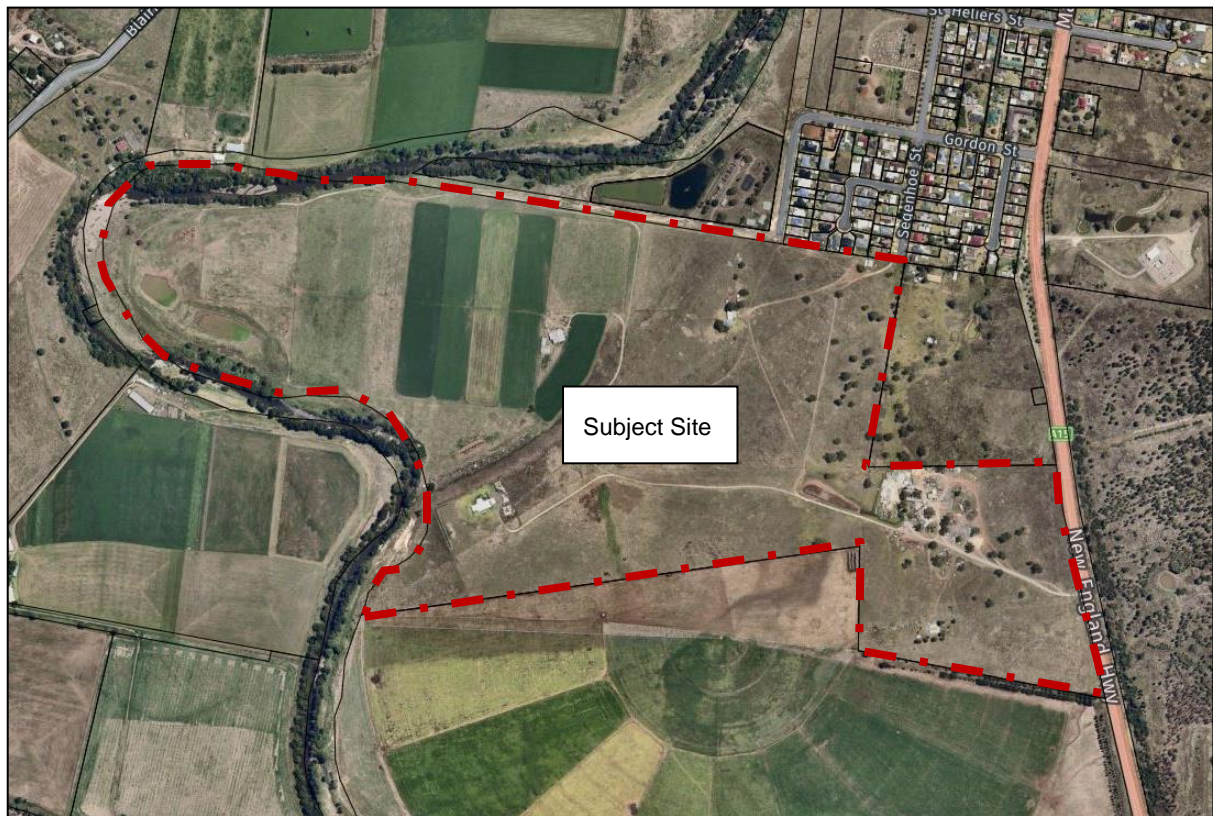
<b>Address:</b>	Lot 51 DP776564, 981 New England Highway Aberdeen 2336
<b>Local Government:</b>	Muswellbrook Shire Council
<b>Locality:</b>	Aberdeen
<b>Area of site:</b>	92.63 ha
<b>Zone:</b>	RU1 – Primary Production



**Figure 1: Location Plan**

Source: NSW ePlanning Portal accessed April 2023

## 3.2 EXISTING SITE



**Figure 2: Site Plan**

*Source: Nearmaps accessed April 2023*

The subject lot is located in the Aberdeen locality and has an area of 92.63 ha. It is zoned RU1 – Primary Production under Muswellbrook LEP 2009.

There are two dwellings and a concrete batching plant located on the site, see **Figure 2** above. Primary access to the lot is from New England Highway running along the eastern boundary. The lot has Hunter River to its west. The lot is generally flat and is predominantly cleared with improved pasture as ground cover.

## 3.3 ARCHAEOLOGY AND HERITAGE

A desktop investigation of the Aboriginal Heritage Information Management System (AHIMS) was undertaken (refer to **Appendix B – AHIMS Report**), which confirmed that there are no records of Aboriginal Heritage or archaeological items found within 200m of the site. The site does not contain any items of local or European Heritage significance.

## 3.4 ACCESS/ TRANSPORT

The primary access is from New England Highway which runs along the east boundary of the site.

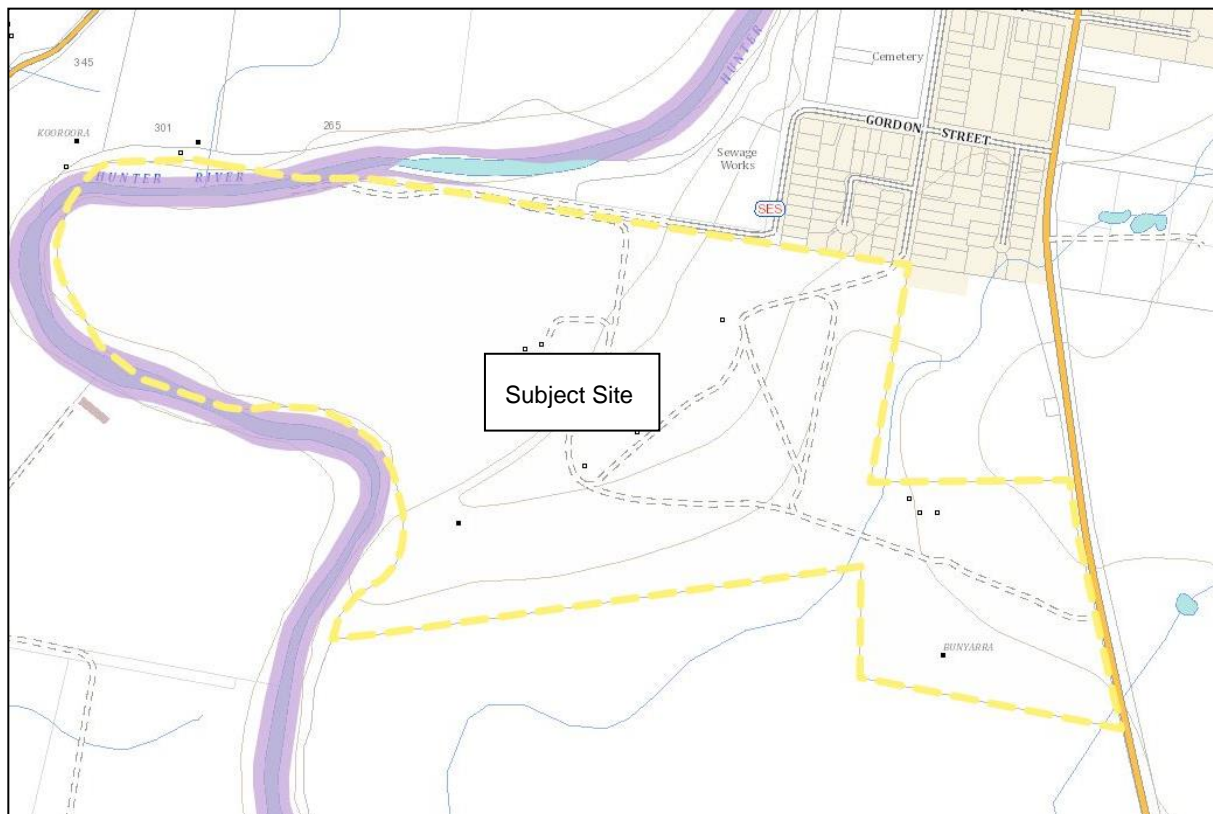


### 3.5 TOPOGRAPHY, HYDROLOGY & VEGETATION

The lot is generally flat with elevation varying from 160m AHD to 184m AHD.

Improved Pature is located over the majority of the site. There are a few scattered trees to the north and east of the site. There are trees along the Hunter River to the west which are mapped to have bio-diversity values in the council's mapping, refer to **Figure 3** below.

Two other hydro lines pass through the site, as shown in the figure below.



**Figure 3: Biodiversity & Hydrolines**

Source: NSW ePlanning Portal accessed April 2023

### 3.6 SURROUNDING LAND USE

Existing site uses to the south and west are generally rural living on farmland. There are conservation lands to the east and a mix of residential and industrial to the north.

### 3.7 SERVICES TO SITE

Currently, only Electricity is available for the site.

### 3.8 FLOODING

The site is not mapped as a Flood Planning Area under flood mapping by the MSC.

However, part of the site is mapped as a Flood Planning Area within the mapping by Upper Hunter Shire Council, as shown in **Figure 4** below.

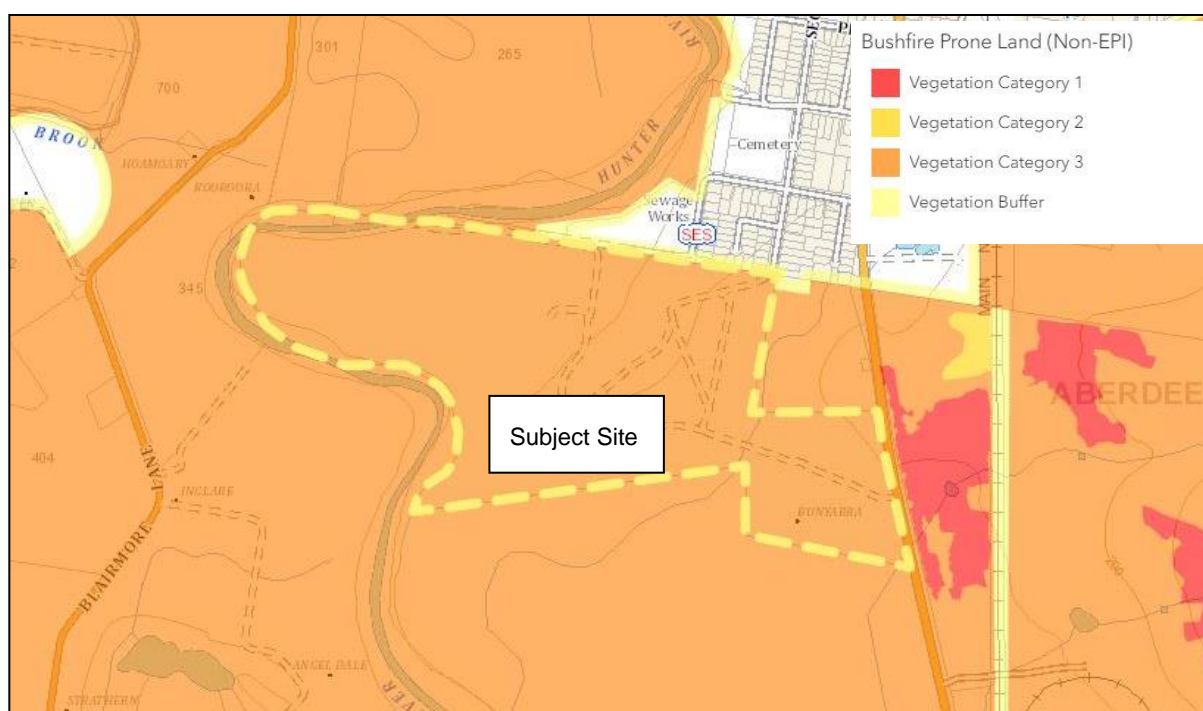


**Figure 4: Flood Mapping**

Source: NSW ePlanning Portal accessed December 2023

### 3.9 BUSHFIRE

Lot is identified as Bushfire-prone land in the Bushfire Planning map by Council, containing *Vegetation Category 3*, as shown in **Figure 5**.



**Figure 5: Bushfire Mapping**

Source: NSW ePlanning Portal accessed April 2023



## 4.0 PROPOSED DEVELOPMENT

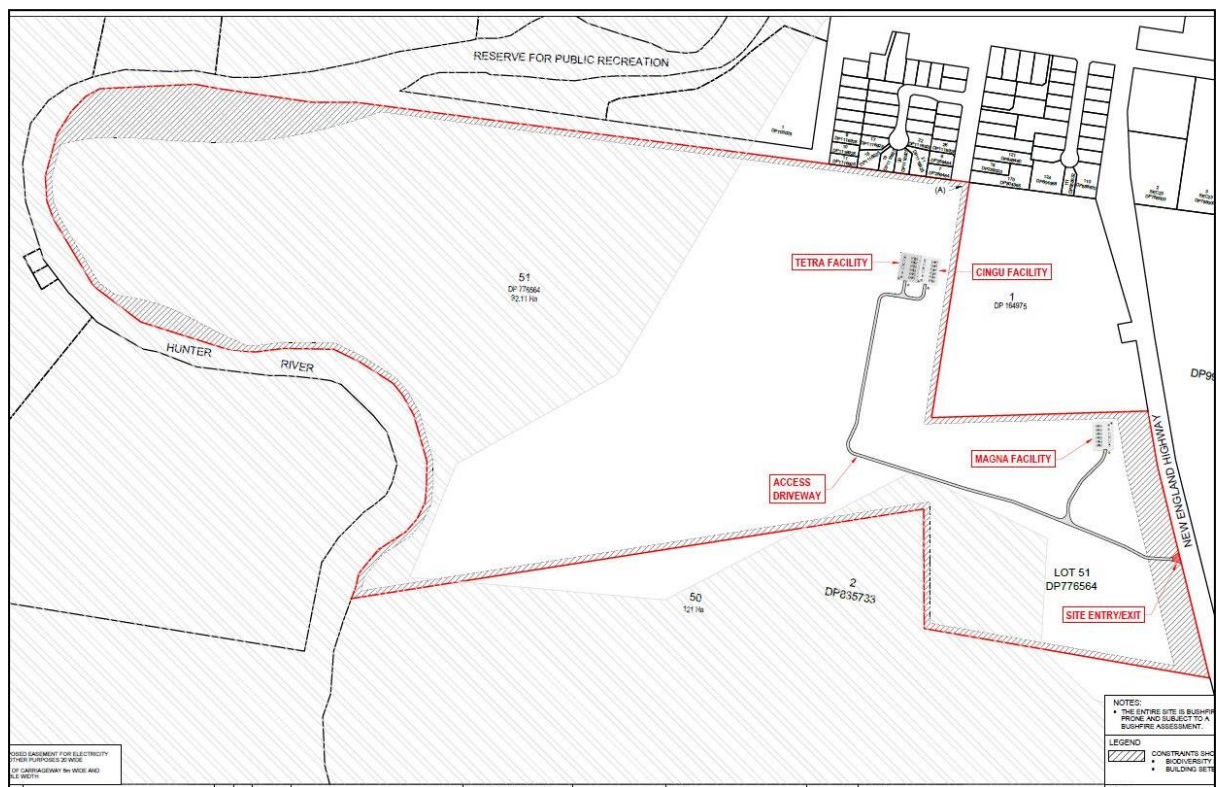
### 4.1 SUMMARY

The applicant seeks development approval for the installation of a Battery Energy Storage System (BESS).

Ausgrid has permitted the client to have three (3) BESS connections on the subject site relying on three (3) separate 11kv “feeders” into the substation. This application is only for installing one (1) BESS named “Cingu” and the site works for Tetra and Cingu. The remaining two (2) BESSs (Tetra and Magna) are subject to separate similar Development Applications.

Development Application for Magna is currently under assessment with the council ref DA 2023/57.

**Figure 6** shows the overall plan for the site showing the location of all three (3) BESSs.

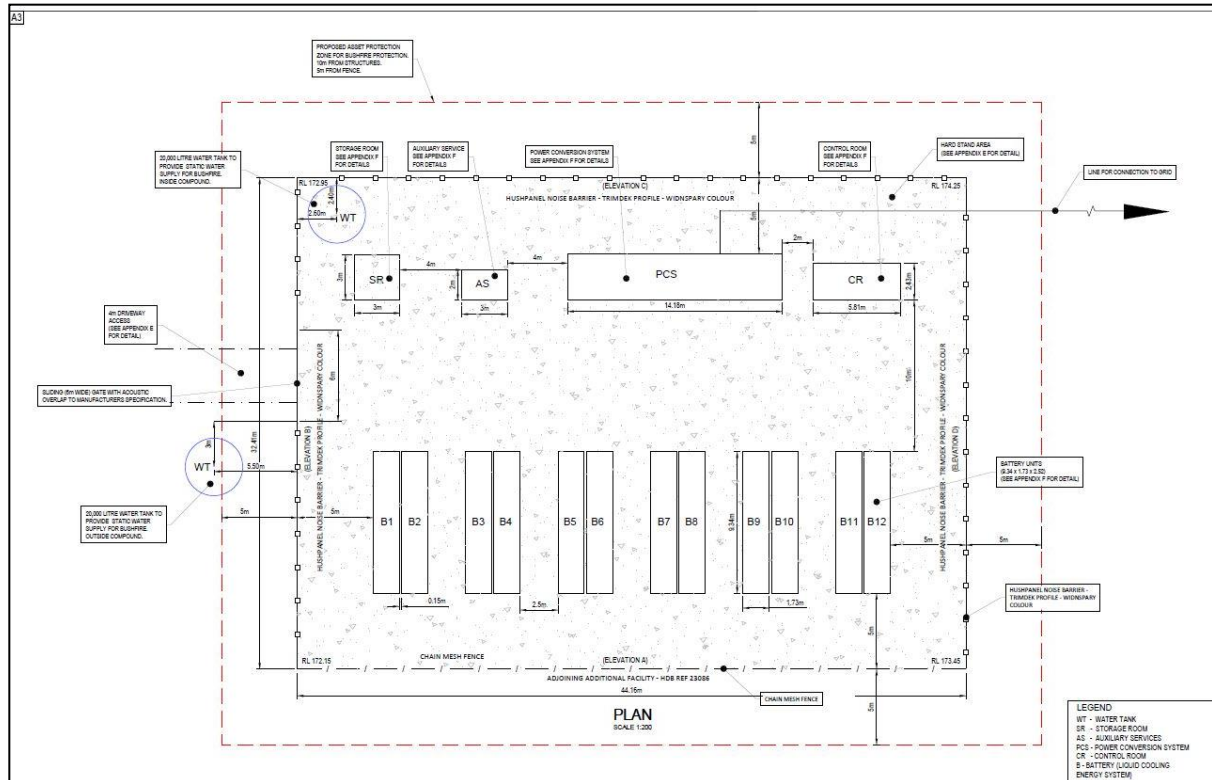


**Figure 6: Overall Site Layout**

Source: HDB

A BESS is a 4.98 MW energy storage system that captures energy from the electrical grid at low demand and discharges electricity at times of high demand.

Ten (10) Battery Units will be initially installed on the land and a further two (2) in 4 years to cover degradation. The battery unit complex will be contained within a fenced compound as shown in **Figure 7** below. Refer to **Appendix D** for further details.



The following section provides details regarding the design, functioning, and installation of the proposed BESS.

## 4.2 DETAILS

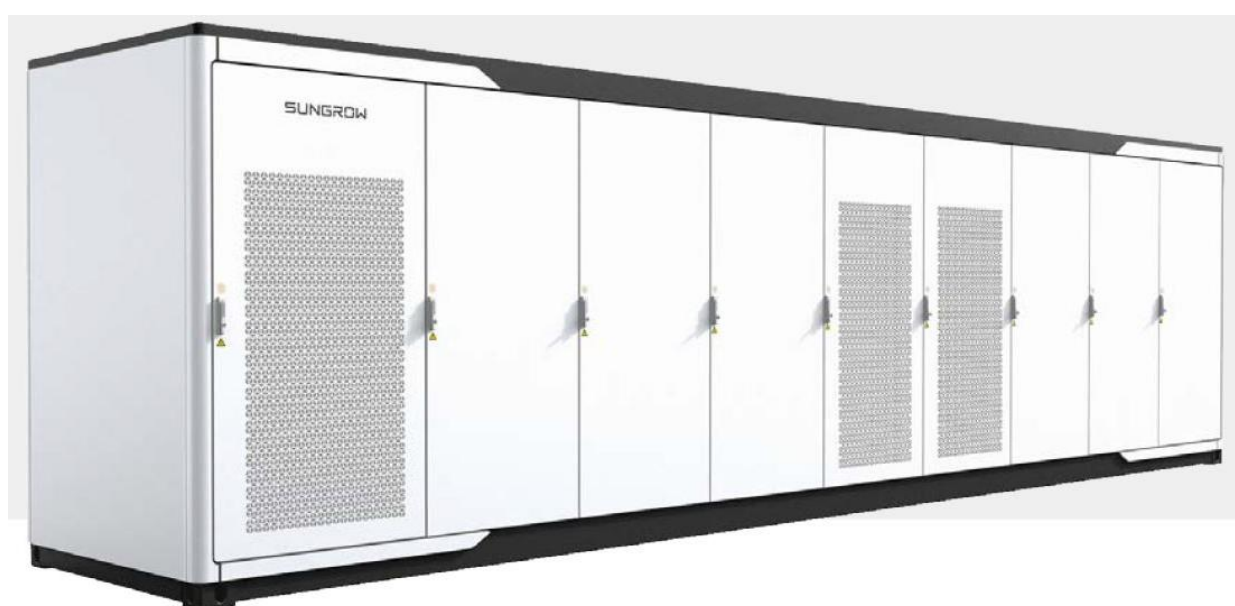
### 4.2.1 DESIGN

The proposed BESS will consist of 10 to 12 Battery Cabinets (ST2752UX), and other containers to house power equipment, switchgear, and controllers positioned in the direction of the connection line out to the boundary.

A summary of the design of the Battery Cabinets is shown in **Table 1** below, with the complete specifications available in **Appendix F**.

**Appendix F** also summarises the working of BESS, the functioning and specification of the various components of BESS, and an overview of the Liquid Cooling System.

<b>Battery Type - ST2752UX</b>	
<b>Battery Technology</b>	Liquid Cooling Energy Storage System
<b>Battery Cabinet Dimension</b>	9340L X 2520H X 1730W mm
<b>Battery Cabinet Weight</b>	26,000 kg
<b>Number of Battery Cabinets</b>	10 to 12
<b>Power Generation</b>	4.98 Mw over 4 hours continuous

**Table 1: Battery Cabinet***Source: Sungrow Power Supply Co. Ltd. 2021***Figure 8: Battery Cabinet***Source: Sungrow Power Supply Co. Ltd. 2021*

### 4.2.2 ACCESS

There is an existing driveway from New England Highway that will be extended to provide access to the Battery facility (for both Tetra and Cingu). Refer to **Appendix C** for more details.

It is not proposed to upgrade the vehicular access with the New England Highway, due to the very low vehicle movements required to maintain the BESS facility. Within the site, vehicular access to the BESSs will be via existing access driveways, where necessary, these will be upgraded to a minimum width of 4m. The only new vehicle access construction proposed for the development is the final 100m, to provide entry into the facilities. Refer to **Appendix C** for more details.



A Traffic Impact Assessment has also been prepared to assess the suitability of the proposed driveway. Please refer to **Appendix G**.

#### 4.2.3 PARKING

No formal or dedicated parking facilities are proposed or required to be provided throughout the site, as the maintenance vehicles will park around the site as needed to service the batteries.

#### 4.2.4 HOURS OF OPERATION

Construction will be off-site and delivery and erection will occur over a 4 to 6 hours time period. The site will be operated remotely and visitation for general maintenance will occur 1 to 2 times per month.

#### 4.2.5 STAFFING

No permanent staff will be located on the site. The site will be operated remotely.

#### 4.2.6 LIGHTING

Sites will be remotely controlled with monitored 24/7 CCTV surveillance. The BESS will be lit permanently during the night by low-level low illuminating lights.

It is also proposed to install soft white lights for security and maintenance reasons which can be switched on when required.

The colour temperature of the lights is 4000k. The lights will be installed at or below the top height of the battery equipments, facing downward. Night lighting will be dim, and low-key to minimise visual impact, light pollution, and fauna impact.

Standby auxiliary power systems will ensure lighting remains viable in blackout situations.

#### 4.2.7 FENCING

A 3m high Hush Panel Wall fencing is proposed around the outer perimeter of the development pad. This fencing has been chosen for its acoustic properties and to provide a better visual screening from the surrounding properties. Please refer to **Appendix H – Hush Panel Specifications**.

A 1.8m high chain mesh fencing is proposed on the inner western side to separate the proposed BESS from the other adjoining BESS (Tetra). Please refer to **Appendix D**.

#### 4.2.8 LANDSCAPING

Landscaping is proposed to all sides along the fencing, concealing BESS from the adjoining properties and the New England Highway to the east. This will be in accordance with the landscape details shown in **Appendix I**.

The plans consider the site configuration and provide details regarding the proposed landscaping -species, size, and maintenance schedule.

The documentation also includes the elevation of the proposed BESS along with the proposed landscaping at different growth periods ie., after 1 yr, 5yr, and full growth. It is to be noted that the proposed facility will be mostly screened from the proposed landscaping within 5 years and will not be visible at all, once the trees reach their mature stage.

Additionally, five(5) viewpoints have been selected from five different surrounding points. Viewpoint 1 (VP1) and VP2 depict the views from the eastern lot/New England Highway. There is a residential neighbourhood to the north and VP 3 and VP4 are, therefore, taken to provide the views from this residential neighbourhood. Additionally, Viewpoint 5 has been selected to assess the visual impact of the proposed BESS to the nearest dwelling to the west. Please refer to pages 12 to 16 in **Appendix I**. From all the viewpoints, it is evident that the proposed BESS will be fully screened by the proposed landscaping.

The 10m wide proposed landscaping including tall canopy trees along with the subtle Windspray coloured 3m high hush panel would screen the proposed BESS entirely negating any visual impacts on the surrounding developments.

#### 4.2.9 EARTHWORKS

As part of the site preparation works for the Tetra, it is proposed to also construct the site works for the future Cingu including the access driveways, pad, and stormwater management. Both proposed facilities are adjacent to each other and will share a common driveway. The only work external to the facility for the Cingu site is the trenching for the connection point.

It is proposed to set the edge of the proposed pads approximately 150mm above the existing ground levels and provide an even grade from the northwest corner to the southeast corner. The proposed pads will generally follow the contour of the existing ground levels. The Tetra site will generate a fill volume of 439.7m<sup>3</sup> and the Cingu site will generate a fill volume of 432.3m<sup>3</sup>, that is a total fill volume of 872m<sup>3</sup>. This will consist of 416m<sup>3</sup> for the compacted gravel pavement and 456m<sup>3</sup> of select material to either be imported or sourced from a suitable location on-site, including trench spoil. Refer to **Appendix E**.

The connection point to the facility has been designed by Northrop and Certified by Ausgrid. The proposed connection point is located at the intersection of Segenhoe Street and Gordon Street. This will require approximately 149m of trenching on site and approximately 223m of trenching in Segenhoe Street. For further details of the connection works, refer to the Northrop plans which have been certified by Ausgrid. Refer to **Appendix J – Ausgrid Certified Plans**.

#### 4.2.10 STORMWATER MANAGEMENT

Overland stormwater flows are directed toward the site from the northwest. It is proposed to construct diversion drains around the northern and western sides of the combined pad to direct overland flows around the site. The diversion drain on the western side will be directed to a proposed culvert under the proposed driveway. At the end of the stormwater diversion works, level spreaders will be provided to spread the overland flows once they are clear of the site.

Refer to *Appendix E* for more details.

## 5.0 LEGISLATIVE CONSIDERATION

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### 5.1 RELEVANT LEGISLATION

#### 5.1.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The Environmental Planning and Assessment Act 1979 (EP&A Act) provides the framework for environmental planning and development approvals and includes provisions to ensure that the potential environmental impacts of a development are assessed and considered in the decision-making process.

The application is subject to Part 4 of the *Environmental Planning & Assessment Act 1979* (EP&A Act). The proposed development is permissible with the consent in accordance with Chapter 2, Part 2.3, Division 4 of *SEPP (Transport and Infrastructure) 2021*.

#### 5.1.2 ENVIRONMENTAL PLANNING AND ASSESSMENT REGULATION 2021

The development is a 4.98 MW Energy System that does not fall within the definition of an “Electricity Generating Station” under Schedule 3 Designated Development, Part 2, Section 24 of the *Environmental Planning & Assessment Regulation 2021*. Therefore, an EIS is not required.

#### 5.1.3 PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997

Schedule 1 of the Protection of the Environment Operations Act 1997 (POEO Act) detailed the Activities required to obtain a license under the act.

The proposal is not listed in Schedule 1 of the POEO Act and therefore, does not require any further reference to this Act.

### 5.2 STATE ENVIRONMENT PLANNING POLICY (SEPP)

#### 5.2.1 SEPP (TRANSPORT AND INFRASTRUCTURE) 2021

*Chapter 2* of this SEPP aims to facilitate the effective delivery of infrastructure across the State of NSW. *Part 2.3: Division 4 Electricity Generating Works or Solar Energy Systems* of the SEPP provides permissibility for this use as follows:

Within the SEPP the Battery Storage is defined as:

***electricity generating works*** means a building or place used for the following purposes, but does not include a solar energy system—

- (a) making or generating electricity,
- (b) electricity storage.

***prescribed non-residential zone*** means any of the following land use zones or a land use zone that is equivalent to any of those zones—

(a) *RU1 Primary Production*

As identified above, Electricity Generating Works are permitted with consent under *Section 2.36* as follows;

### ***2.36 Development permitted with consent***

(1) *Development for the purpose of electricity generating works may be carried out by any person with consent on the following land—*

(a) *in the case of electricity generating works comprising a building or place used for the purpose of making or generating electricity using waves, tides or aquatic thermal as the relevant fuel source—on any land,*

(b) *in any other case—any land in a prescribed non-residential zone.*

#### **Comment:**

The proposal seeks to install a Battery Energy Storage System (BESS) on the subject site.

BESS falls under the definition of “electricity generating works” which are permissible with consent under *Section 2.36* of the SEPP (Transport and Infrastructure) 2021 if the development is proposed in a prescribed zone. The subject site is zoned RU1 under the council’s LEP, which is a prescribed zone under this SEPP.

Therefore, the proposed development is permitted with consent on the subject lot.

## **5.2.2 SEPP (PLANNING SYSTEMS) 2021**

*Chapter 2 State and Regional Development* of the SEPP identifies State significant development, State significant infrastructure, and critical State significant infrastructure.

*Schedule 6, Section 5(a)* of SEPP (Planning Systems) 2021 states:

### ***5 Private infrastructure and community facilities over \$5 million***

*Development that has a capital investment value of more than \$5 million for any of the following purposes—*

(a) *air transport facilities, electricity generating works, port facilities, rail infrastructure facilities, road infrastructure facilities, sewerage systems, telecommunications facilities, waste or resource management facilities, water supply systems, or wharf or boating facilities,*

*(b) affordable housing, child care centres, community facilities, correctional centres, educational establishments, group homes, health services facilities or places of public worship.*

**Comment:**

The proposal will have a capital investment value of more than \$5 million and will trigger Regionally Significant Development.

## 5.2.3 SEPP (RESILIENCE AND HAZARDS) 2021

### **Chapter 3 Hazardous and Offensive Development**

#### **3.1 Aims, objectives, etc.**

*This Chapter aims—*

- (a) to amend the definitions of hazardous and offensive industries where used in environmental planning instruments, and*
- (b) to render ineffective a provision of any environmental planning instrument that prohibits development for the purpose of a storage facility on the ground that the facility is hazardous or offensive if it is not a hazardous or offensive storage establishment as defined in this Chapter, and*
- (c) to require development consent for hazardous or offensive development proposed to be carried out in the Western Division, and*
- (d) to ensure that in determining whether a development is a hazardous or offensive industry, any measures proposed to be employed to reduce the impact of the development are taken into account, and*
- (e) to ensure that in considering any application to carry out potentially hazardous or offensive development, the consent authority has sufficient information to assess whether the development is hazardous or offensive and to impose conditions to reduce or minimise any adverse impact, and*
- (f) to require the advertising of applications to carry out any such development.*

**Comment:**

Riskcon Engineering Pty Ltd has undertaken the *Chapter 3* assessment under *SEPP (Resilience and Hazard) 2021* for the proposed development (BESS). The analysis indicates that the proposed BESS has a discharge capacity of 5MW which is under/less the threshold of 30MW. As the threshold quantities of the Dangerous Goods stored and transported are not exceeded, *Chapter 3 of SEPP(Resilience and Hazard) 2021* is not applicable. The report also conducted a review of the potential of the proposed BESS to pose an unacceptable risk which indicated the site operations would be unlikely to occur at levels, that would pose an unacceptable risk. Refer to **Appendix K**.

Furthermore, a Fire Incident Management Plan (**Appendix L**) has been prepared which addresses the Fire Protection measures within the batteries and assesses the fire risk associated with the BESS. It concludes that the proposed designs in conjunction with existing fire protection adequately manage the risk.

## **Chapter 4 Remediation of Land**

### **4.6 Contamination and remediation to be considered in determining development application**

- (1) A consent authority must not consent to the carrying out of any development on land unless—*
- (a) it has considered whether the land is contaminated, and*
  - (b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and*
  - (c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.*
- (2) Before determining an application for consent to carry out development that would involve a change of use on any of the land specified in subsection (4), the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines.*
- (3) The applicant for development consent must carry out the investigation required by subsection (2) and must provide a report on it to the consent authority. The consent authority may require the applicant to carry out, and provide a report on, a detailed investigation (as referred to in the contaminated land planning guidelines) if it considers that the findings of the preliminary investigation warrant such an investigation.*
- (4) The land concerned is—*
- (a) land that is within an investigation area,*
  - (b) land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines is being, or is known to have been, carried out,*
  - (c) to the extent to which it is proposed to carry out development on it for residential, educational, recreational or child care purposes, or for the purposes of a hospital—land—*
  - (i) in relation to which there is no knowledge (or incomplete knowledge) as to whether development for a purpose referred to in Table 1 to the contaminated land planning guidelines has been carried out, and*



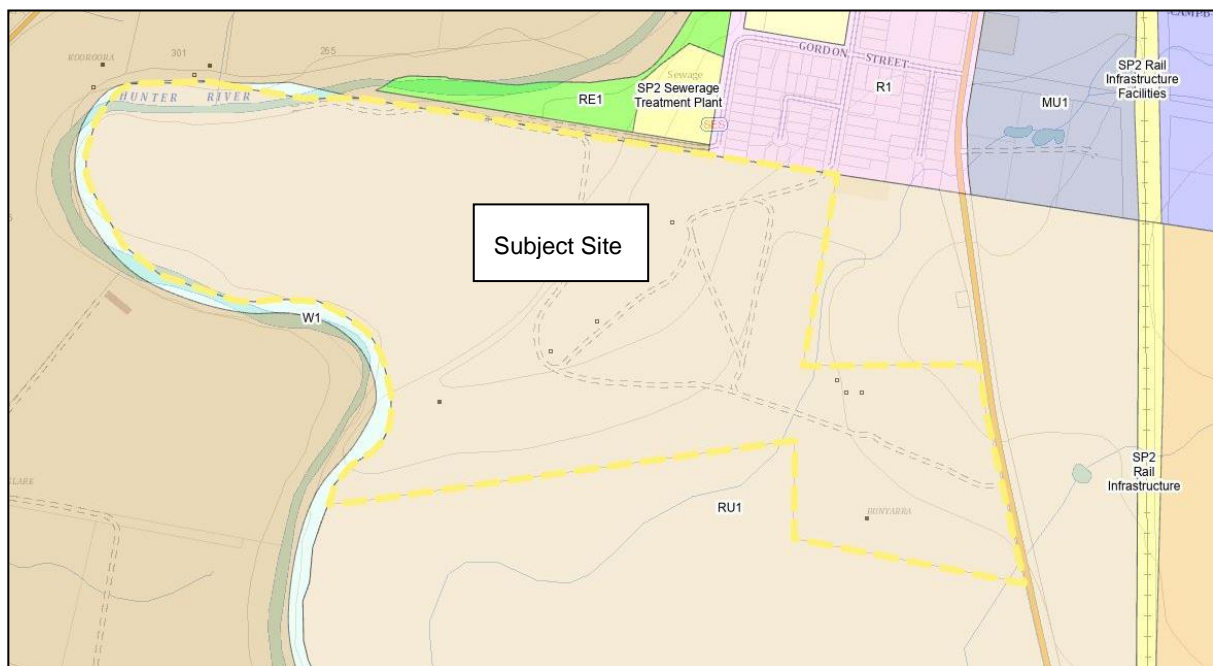
(ii) on which it would have been lawful to carry out such development during any period in respect of which there is no knowledge (or incomplete knowledge).

**Comment:**

The subject land has a long history of being utilised for agricultural pursuits with no history of contamination. The proposed development requires minimal disturbance of the land and will retain its existing viticultural and grazing lands; therefore, it is considered suitable in its current state for the proposed development.

### 5.3 MUSWELLBROOK COUNCIL LOCAL ENVIRONMENTAL PLAN 2009

The subject site is zoned RU1 – Primary Production as shown in **Figure 9** below and is considered permitted with consent under *section 2.1 Land Use Zones*.



**Figure 9: Land Use Zone**

Source: NSW ePlanning Portal accessed May 2023

#### ***Zone RU1 Primary Production***

##### ***1 Objectives of zone***

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
- *To encourage diversity in primary industry enterprises and systems appropriate for the area.*
- *To minimise the fragmentation and alienation of resource lands.*



- *To minimise conflict between land uses within this zone and land uses within adjoining zones.*
- *To protect the agricultural potential of rural land not identified for alternative land use, and to minimise the cost to the community of providing, extending and maintaining public amenities and services.*
- *To maintain the rural landscape character of the land in the long term.*
- *To ensure that development for the purpose of extractive industries, underground mines (other than surface works associated with underground mines) or open cut mines (other than open cut mines from the surface of the flood plain), will not—*
  - (a) destroy or impair the agricultural production potential of the land or, in the case of underground mining, unreasonably restrict or otherwise affect any other development on the surface, or*
  - (b) detrimentally affect in any way the quantity, flow and quality of water in either subterranean or surface water systems, or*
  - (c) visually intrude into its surroundings, except by way of suitable screening.*
- *To protect or conserve (or both)—*
  - (a) soil stability by controlling development in accordance with land capability, and*
  - (b) trees and other vegetation, and*
  - (c) water resources, water quality and wetland areas, and their catchments and buffer areas, and*
  - (d) valuable deposits of minerals and extractive materials by restricting development that would compromise the efficient extraction of those deposits.*

## **2 Permitted without consent**

*Extensive agriculture; Home occupations; Intensive plant agriculture*

## **3 Permitted with consent**

*Air transport facilities; Airstrips; Animal boarding or training establishments; Aquaculture; Camping grounds; Caravan parks; Cellar door premises; Cemeteries; Community facilities; Crematoria; Depots; Dwelling houses; Eco-tourist facilities; Educational establishments; Environmental facilities; Environmental protection works; Extractive industries; Farm buildings; Flood mitigation works; Forestry; Function centres; Group homes; Hazardous industries; Health consulting rooms; Heavy industrial storage establishments; Helipads; Highway service centres; Home-based child care; Home businesses; Home industries; Industrial retail outlets; Information and education facilities; Intensive livestock agriculture; Kiosks; Landscaping material supplies; Open cut mining; Places of public worship; Plant nurseries; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Research stations; Restaurants or cafes;*

*Roads; Roadside stalls; Rural industries; Rural supplies; Rural worker's dwellings; Secondary dwellings; Service stations; Sewerage systems; Signage; Storage premises; Take away food and drink premises; Tourist and visitor accommodation; Transport depots; Truck depots; Turf farming; Veterinary hospitals; Waste disposal facilities; Water supply systems*

#### **4 Prohibited**

*Any development not specified in item 2 or 3*

##### **Comment:**

As per Muswellbrook Local Environment (LEP) 2009, BESS is defined as “Electricity Generating Works”, which is not identified as a permissible use within the RU1 zone.

However, the proposed works fall within the provisions of SEPP (Transport and Infrastructure)2021, this policy prevails over Muswellbrook Local Environment (LEP) 2009 as identified by *section 2.7* of the SEPP and has been addressed in **Section 5.2** above.

Moreover, the proposed development is considered to be consistent with the relevant objectives of the zone, in particular noting the following;

- The proposal provides a new technology on the site, hence diversifying uses.
- BESS is a small addition of 32.5m X 44.2m which is insignificant for the 92.63 ha site. It will not intrude on the agricultural potential of the land.
- Minimal vegetation clearing is required for the installation of the proposed facility. Additional landscaping is proposed around the development to avoid any visual impacts of the development on the surrounding properties/land uses.
- The proposed development only requires electricity which is already available to the lot, therefore, avoiding any unreasonable or uneconomic demands for the provision or extension of services.

## **5.4 DEVELOPMENT CONTROL PLAN**

The following table provides an assessment of the proposal against the requirements of the Muswellbrook Development Control Plan (DCP) 2009. Where a variation is sought, due to the nature of the development/site, the potential impacts have been considered and justified in the following section.

Item	DCP Requirement	Proposed	Compliance
<b>Section 8 – Rural &amp; Environmental Zone Development</b>			
8.1.1 Dwelling Houses on existing parcels of land	<p>(i) Development applications for new dwellings demonstrate that the subject land comprises the whole of an existing holding including historic ownership pattern from title documents.</p> <p>(ii) Development applications for new dwellings demonstrate development consent for original subdivision under the Muswellbrook LEP 1985 granted dwelling entitlement under that instrument.</p>	<p>Not Applicable.</p> <p>The proposal does not seek the development of a dwelling house.</p>	<b>Not Applied</b>
8.2.1 Scenic Protection and Building Location	<p>a) To ensure that the location of buildings do not detract from the natural or rural setting or scenic qualities of a site</p> <p>b) To ensure that buildings do not dominate the surrounding natural landscape features.</p>	<p>The proposed BESS compound is a small addition of 1436.5m<sup>2</sup> which is insignificant for the 92.63 ha site. It is sited in an area with appropriate setbacks to the existing road and other surrounding developments. Refer to <i>Appendix C</i>.</p> <p>Moreover, new landscaping (10m wide) will be integrated with the development to avoid any visual impact on the existing rural setting and surrounding residential. Refer to <i>Appendix I</i>.</p>	<b>Yes</b>
8.2.2 Setbacks	<p>a) To ensure that development in rural areas is located to minimise visual and acoustic impacts on public places</p>	<p>BESS is proposed in an area with appropriate setbacks from properties to the east and the north.</p> <p>Moreover, separation fencing and additional landscaping are integrated with the development to</p>	<b>Yes</b>

	<p>b) To ensure that development in rural areas is located in consideration of existing and possible future land uses on adjoining land.</p> <p>c) Buildings are setback a minimum of 50m from any public road</p> <p>d) Buildings are not located within 10m of any property boundary.</p> <p>e) A suitable buffer area is established in the vicinity of agricultural operations that may occur on adjoining land.</p> <p>f) Separation fencing is provided between development land and any adjoining rail corridor.</p>	provide a noise barrier and buffer to reduce the visual impact. Refer to <b>Appendix I</b> .	
8.2.3 Colours and Materials	<p>(i) Use natural colours, muted and earth tones for major areas of the building, such as walls and roof, and restrict stronger colours to smaller features such as window frames, doors and decorative woodwork</p> <p>(ii) Use factory pre-coloured materials with low reflective properties.</p> <p>(iii) To ensure new buildings do not result in adverse visual impacts to road users or nearby properties.</p>	<p>The battery units are pre-fabricated and have low reflective properties.</p> <p>A 3m high hush panel wall fencing in Windspray colour has been proposed around the BESS. Please refer to <b>Appendix H</b>. The colour has been chosen to sit in harmony with the surrounding rural setting.</p>	<b>Yes</b>
8.2.4 Car parking and Access	a) To ensure that adequate car parking and access is provided to service new development	No formal or dedicated parking facilities are proposed or required to be provided on the site. Once installed, the site will work independently without any permanent/full-time staff. Maintenance vehicles can park within the site as needed to service the batteries.	<b>Yes</b>

		A Traffic Impact Assessment has also been prepared to assess the suitability of the proposed driveway and parking provisions. Please refer to <b>Appendix G</b> .	
8.2.5 Temporary Dwellings	a) To ensure that buildings used for temporary dwellings do not detract from the general amenity of the locality b) To ensure consistency in the application of provisions relating to periods of temporary occupation	No Temporary Dwelling has been proposed as part of the application, therefore, not applicable.	<b>Not Applied</b>
8.3.1 Topography	a) To preserve the natural landform of the Shire b) To ensure that any developments are constructed to be unobtrusive and consistent with relevant landform conditions c) To ensure that any filling of area or rehabilitation is undertaken to produce a final landform that is consistent with surrounding topography.	The proposed development consists of modular battery storage units of size about 10m X 1.7m. The whole compound is a small addition of 1436.5m <sup>2</sup> which is insignificant for the 92.63 ha site. Refer to <b>Appendix E</b> . Moreover, the compound is proposed in an area that is generally flat and no major earthworks are proposed for the installation of the BESS.	<b>Yes</b>
8.3.2 Vegetation	a) To protect and enhance the remnant vegetation distributed across the Muswellbrook Shire b) To comply with the provisions of Native Vegetation Act 2003 which aims to prevent broad scale clearing across NSW c) To protect and preserve natural fauna habitat through the protection of native remnant vegetation d) Consideration of matters during the assessment of development applications as listed by the Fisheries Management Act 1994, Threatened	Four (4) trees are proposed to be removed as part of the proposal. As mentioned in the Ecological Assessment Report by Wildthing ( <b>Appendix M</b> ), one canopy tree (Tree No. 12) will be required to be removed for the access road, and an additional 3 trees (29, 30, and 31) which includes one dead tree may be required to be removed for the installation of the 11kv Cable. The report assesses the removal of the vegetation and concludes that the proposal will result in a small incremental reduction of PCT 3431 Central Hunter	<b>Yes</b>

	<p>Species Conservation Act 1995 and Environmental Protection and Biodiversity Act 1999.</p> <p>e) To minimise the amount of clearing required to develop properties to that only as necessary for development.</p> <p>f) Reduce the spread of weed species.</p>	Ironbark Grassy Woodland Given the mitigation measures the proposal is unlikely to disrupt the life cycle of any addressed threatened species, endangered population or endangered ecological community such that local extinction would occur. Refer to <b>Appendix M – Ecological Assessment</b> for more details.	
8.3.3 Riparian buffers	<p>(i) A riparian buffer area is generally defined as the area located within 40m of each bank of a river, stream, creek, tributary or other natural water course.</p> <p>(ii) Avoid undertaking works within riparian buffer areas where other options are available. Any proposed development within the riparian buffer area is accompanied by a detailed consideration of the environmental impacts associated with the proposal and alternative options considered and reasons why those alternatives are not viable.</p> <p>(iii) Consideration of habitat connectivity during the assessment of developments which may impact on watercourses and riparian vegetation.</p>	The BESS compound is not proposed within 40m of the existing hydro-lines or riparian buffer area. Therefore, this clause does not apply to the proposed development.	<b>Not Applied</b>
8.3.4 Management of Rivers, Creeks, Streams and Drainage	<p>a) To protect and enhance natural water courses and their associated vegetation throughout the Shire</p> <p>b) Protection of fauna habitat associated with water courses and riparian vegetation to promote biodiversity</p> <p>c) Consideration of matters during the assessment of development applications as listed by the Fisheries Management Act 1994, Threatened</p>	As mentioned above, the proposed compound is not within 40m of any existing creek/water dams. It will not cause any disturbance to existing natural water courses or vegetation.	<b>Yes</b>

	<p>Species Conservation Act 1995 and Environmental Protection &amp; Biodiversity Act 1999.</p> <p>d) Ensure that development maintains and enhances the integrity of water quality, ecosystem health and biodiversity within or adjacent to key aquatic habitats</p> <p>e) Protect and enhance wildlife corridors which are located in the riparian vegetation of watercourses.</p>		
8.3.5 Services	a) To ensure that rural development is provided with adequate services.	The proposed development will not require any additional services other than electricity which is already available on the site.	<b>Yes</b>
8.3.6 Buffers	<p>a) Adequate buffers are provided between proposed development and existing development on adjoining land or where potential land use conflicts may arise.</p> <p>b) The agricultural potential or residential amenity of land will not be diminished as a result of a development proposal.</p>	<p>The development has been proposed in an area adequately setback from New England Highway and the surrounding properties.</p> <p>Moreover, a 3m high hush panel wall fencing and 10m wide landscaping will be integrated with the proposed compound to avoid any visual impact. Refer to <i>Appendix I</i>.</p>	<b>Yes</b>
8.4 Frost Control Fans	<p>a) To provide an equitable balance between the use of frost control fans and the amenity of surrounding properties;</p> <p>b) To address the interface issues regarding the installation and operation of frost control fans and the concern of adjacent neighbours;</p> <p>c) To set standards appropriate for the installation and operation of frost control fans; and</p>	<p>Not Applicable.</p> <p>No Frost Control Fan has been proposed as part of the application.</p>	<b>Not Applied</b>

	d) To allow for sustainable horticulture.		
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**Table 2: DCP Compliance Table**  
*Source: HDB Town Planning and Design*



## 6.0 KEY PLANNING/ENVIRONMENTAL ISSUES

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### 6.1 CONTEXT AND SETTING

The proposal seeks approval to install a Battery Energy Storage System (BESS) on about 92.63-ha rural property.

The proposed facility is 32.5m X 44.2m is relatively insignificant when compared to the size of the property. The facility will have a 3m high fence around it. A 10m wide landscaping is also included around the fenced facility, screening the development from surrounding properties and New England Highway. Refer to **Appendix I**.

Therefore, it is considered the proposal would not have any impact on the surrounding rural character.

### 6.2 ACCESS, TRANSPORT, AND TRAFFIC

There is an existing driveway from New England Highway that will be extended to provide access to the Battery facility.

It is not proposed to upgrade the vehicular access with the New England Highway, due to the very low vehicle movements required to maintain the BESS facility. Within the site, vehicular access to the BESSs will be via existing access driveways, where necessary, these will be upgraded to a minimum width of 4m. The only new vehicle access construction proposed for the development is the final 100m, to provide entry into the facilities. Refer to **Appendix E** for more details.

A Traffic Impact Assessment has been prepared by Interest Traffic and is attached as **Appendix G**.

### 6.3 VISUAL IMPACT

A 10m wide screen planting will be integrated around the proposed BESS. Please refer to **Appendix I – Landscape Plans**.

The documentation shows the elevation of the proposed BESS along with the proposed landscaping at different growth periods ie., after 1 yr, 5yr, and full growth. The proposed facility will be mostly screened from the proposed landscaping within 5 years and will not be visible at all, once the trees reach their mature stage.

Additionally, five(5) viewpoints have been selected from five different surrounding points. Viewpoint 1 (VP1) and VP2 depict the views from the eastern lot/New England Highway. There is a residential neighbourhood to the north and VP 3 and VP4 are, therefore, taken to provide the views from this residential neighbourhood. Additionally, Viewpoint 5 has been selected to assess the visual impact of the proposed BESS to the nearest dwelling to the west. Please refer to pages 12 to 16 in **Appendix I**. From all the viewpoints, it is evident that the proposed BESS will be fully screened by the proposed landscaping.

The 10m wide proposed landscaping including tall canopy trees along with the subtle Windspray coloured 3m high hush panel would screen the proposed BESS entirely negating any visual impacts on the surrounding developments.

## 6.4 SERVICES

The proposed development will not require any additional services other than electricity which is already available on the site.

## 6.5 STORMWATER

Overland stormwater flows are directed toward the site from the northwest. It is proposed to construct diversion drains around the northern and western sides of the combined pad to direct overland flows around the site. The diversion drain on the western side will be directed to a proposed culvert under the proposed driveway. At the end of the stormwater diversion works, level spreaders will be provided to spread the overland flows once they are clear of the site.

Refer to *Appendix E* for more details.

## 6.6 EARTHWORKS

As part of the site preparation works for the Tetra, it is proposed to also construct the site works for the future Cingu including the access driveways, pad, and stormwater management. Both proposed facilities are adjacent to each other and will share a common driveway. The only work external to the facility for the Cingu site is the trenching for the connection point.

It is proposed to set the edge of the proposed pads approximately 150mm above the existing ground levels and provide an even grade from the northwest corner to the southeast corner. The proposed pads will generally follow the contour of the existing ground levels. The Tetra site will generate a fill volume of 439.7m<sup>3</sup> and the Cingu site will generate a fill volume of 432.3m<sup>3</sup>, that is a total fill volume of 872m<sup>3</sup>. This will consist of 416m<sup>3</sup> for the compacted gravel pavement and 456m<sup>3</sup> of select material to either be imported or sourced from a suitable location on-site, including trench spoil. Refer to *Appendix E*.

The connection point to the facility has been designed by Northrop and Certified by Ausgrid. The proposed connection point is located at the intersection of Segenhoe Street and Gordon Street. This will require approximately 149m of trenching on site and approximately 223m of trenching in Segenhoe Street. For further details of the connection works, refer to the Northrop plans which have been certified by Ausgrid. Refer to *Appendix J – Ausgrid Certified Plans*.

## 6.7 FLORA AND FAUNA

Four (4) trees are proposed to be removed as part of the proposal.

As mentioned in the Ecological Assessment Report by Wildthing (*Appendix M*), one canopy tree (Tree No. 12) will be required to be removed for the access road, and an additional 3 trees (29, 30, and 31) which includes one dead tree may be required to be removed for the installation of the 11kv Cable.

The report assesses the removal of the vegetation and concludes that the proposal will result in a small incremental reduction of PCT 3431 Central Hunter Ironbark Grassy Woodland. Given the mitigation measures the proposal is unlikely to disrupt the life cycle of any addressed threatened species, endangered population or endangered ecological community such that local extinction would occur. Refer to *Appendix M – Ecological Assessment* for more details.

## 6.8 HERITAGE

There are no recorded items of Heritage or Aboriginal Cultural significance on the site. Refer to *Appendix B – AHIMS Report*.

## 6.9 BUSHFIRE

The site is mapped as a bushfire-prone land. A bushfire report is attached as *Appendix N – Bushfire Report*.

## 6.10 FLOODING

The site is not mapped as a Flood Planning Area under flood mapping by the council. While the part of the site is mapped as a Flood Planning Area in Upper Hunter Shire's mapping, the development is proposed in a flood-free area. Therefore, no further investigation is considered.

## 6.11 NOISE

A Noise Impact Assessment has been carried in accordance with the NSW Noise Policy and Industry. The assessment has been prepared in respect to the cumulative noise emission from the three (3) BESSs on the subject site. Please refer to *Appendix O*.

Two main modeling scenarios were considered in order to achieve the applicable noise criteria at the sensitive residential receptors;

1. Currently selected plant/equipment – only acoustic treatment is a 3m high acoustic barrier wall (hush panel).
2. Currently selected plant/equipment – acoustic barrier plus additional acoustic treatments on BESS battery containers and PCS invertors.

*Scenario 2* is recommended, required to achieve the required noise level criteria, which include quieter equipment selections such as fans, acoustic attenuators, enclosures, and barriers.

It is considered that the driving fundamentals of the detailed design for the Construction Certificate of the noise suppression option would be proven. The plant would not be able to operate unless it was certified for adhering to the noise criteria.

The Noise Planning Level at the boundary will be validated by further noise testing prior to the BESS being operational.

## 6.12 PRELIMINARY HAZARD ANALYSIS

Riskcon Engineering Pty Ltd has undertaken the Chapter 3 assessment under SEPP (Resilience and Hazard) 2021 for the proposed development (BESS). The analysis indicates that the proposed BESS has a discharge capacity of 5MW which is under/less the threshold of 30MW. As the threshold quantities of the DGs stored and transported are not exceeded, Chapter 3 of SEPP(Resilience and Hazard) 2021 is not applicable. The report also conducted a review of the potential of the proposed BESS to pose an unacceptable risk which indicated the site operations would be unlikely to occur at levels, that would pose an unacceptable risk. Refer to *Appendix K*.

Furthermore, a Fire Incident Management Plan (*Appendix L*) has been prepared which addresses the Fire Protection measures within the batteries and assesses the fire risk associated with the BESS. It concludes that the proposed designs in conjunction with existing fire protection adequately manage the risk.

## 6.13 WASTE

During the construction phase, the waste will be collected in large skip bins on-site and removed at the completion of construction for recycling. Construction waste will generally consist of:

- Excess wiring from installation and attachment to grid.
- Steel offcuts from framing; and
- Cardboard and plastic from packaging of battery units.

The general waste management practices that will be followed on the site will be:

- Avoidance – design, measure and calculate materials required to avoid excess materials being generated.
- Reuse – there is limited potential for reuse of materials during construction, however, items such as fencing may be reused where possible; and
- Recycling - the waste will be separated into various recyclable products, i.e. timber, glass, metals, and be disposed of at the appropriate recycle centres as required. The timber pallets will be advertised locally for free collection for recycling purposes.

Most of the waste will be removed for recycling.

No waste will be generated during the operation of the Battery Energy Storage System (BESS). Refer to *Appendix P* for detailed WMMP.

## 6.14 DECOMMISSIONING

A decommissioning report has been prepared and is attached as *Appendix Q*.

## 6.15 SAFETY AND SECURITY

It is considered that the proposal will not have any adverse impacts on the safety and security of the area. A 3m high hush panel wall fencing will be constructed around the compound as shown in *Appendix D*.

While the facility will be remotely controlled with 24/7 CCTV surveillance, it will be lit permanently during the night by low-level illuminating lights.

## 7.0 PROJECT JUSTIFICATION AND NEED

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The proposal to develop a new 4.98 MW Battery Energy Storage Facility on an existing agricultural grazing property provides the local area with a source of renewable energy, whilst having minimal environmental impacts and disturbance to the land.

The subject site has an ideal location with easy access to the property and an existing electrical grid and substation. It has been designed to limit any acoustic and visual impacts on the surrounding properties or rural character or any other future uses.

This proposal is one of several future BESS proposed for the Region, and is consistent with the goals under *Objective 1: Diversifying the Hunter's mining, energy and industrial capacity* and *Objective 7: Reach net zero and increase resilience and sustainable infrastructure* of Hunter Regional Plan 2041.

## 8.0 CONCLUSION

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This Statement of Environmental Effects has been prepared having regard to the requirements of s4.15 of the *Environmental Planning and Assessment Act 1979*.

In reviewing the relevant statutory and non-statutory planning standards and objectives, it is concluded that the proposal presents:

- Minimal adverse impacts on the surrounding environment;
- Permissible development under *section 2.36 – SEPP (Infrastructure and Transport) 2021*;
- A sustainable design that enables creative and efficient use of the land; and
- Compliant with all relevant statutory and non-statutory planning provisions.

Muswellbrook Shire Council is therefore respectfully requested to grant consent to this development application, with appropriate conditions.

## **APPENDIX A**

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### **TITLE SEARCH**



## **APPENDIX B**

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### **AHIMS REPORT**

## **APPENDIX C**

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### **SITE LAYOUT**

## **APPENDIX D**

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### **COMPOUND LAYOUT**

## **APPENDIX E**

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### **COMPOUND DETAILS**

## **APPENDIX F**

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### **OPERATIONAL INFORMATION**

## **APPENDIX G**

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### **TRAFFIC IMPACT ASSESSMENT**



## **APPENDIX H**

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### **HUSH PANEL SPECIFICATIONS**

## **APPENDIX I**

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### **LANDSCAPE PLAN**

## **APPENDIX J**

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### **AUSGRID CERTIFIED PLANS**

## **APPENDIX K**

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### **SEPP-RH REPORT**

## **APPENDIX L**

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### **FIRE INCIDENT MANAGEMENT PLAN**

## **APPENDIX M**

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### **ECOLOGICAL ASSESSMENT**



## **APPENDIX N**

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### **BUSHFIRE REPORT**

## **APPENDIX O**

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### **NOISE IMPACT ASSESSMENT**

## **APPENDIX P**

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### **WASTE MANAGEMENT AND MINIMISATION PLAN**

## **APPENDIX Q**

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### **DECOMMISSIONING REPORT**